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CONTENTS.

No.		Page.
1.	The Irulars–By *C. P. Bhimayya*, B.A., M.F C., 1933—35 Division	59
2.	College Notes:—	
	1. The Madras Forest College Athletic Sports 1933	67
	2. Swimming Race at Nadungayam, for the Senior Students	69
	3. Foot Ball	70
	4. Rao Sahib, P. Sankunni Menon ...	71
3.	Garcinia cambogia — its utility—By *N. C. Madappa*, M.F.C., 1932—34 Division ...	71
4.	Review on Administration Report of the Forest Department, Cochin State for 1931–32.	73
5.	Extracts:—	
	(i) The parasitic habit of the Sandal tree ...	75
	(ii) The Hoover Dam	75
	(iii) A giant Electric Clock	76
	(iv) Insect transmission of Spike disease ...	77
	(v) Preservation of wild Life in S. India ...	79
	(vi) Tallest Wooden Building	82
	(vii) Effect of Yeast on the growth of plants...	82
	(viii) Germinating coconuts on a new volcanic island, Krakatoa	84
	(ix) Indian coracles	84
	(x) Malaria: its prevention and cure ...	85
	(xi) Public apathy to Forestry	89
6.	Additions to the Museum and the Library ...	94
7.	Notice: *Indian Forester* Prize, 1934 Past Students	98
8,	Departmental Notifications	99

THE NEDUNGAYAM BRIDGE. (Opened in June 1933).

Upper half of Photograph: The Nedungayam Bridge under construction.

Lower half „ „ : The Nedungayam Bridge after completion.

[*Note*:—The views are laterally inversed, as it was not possible to obtain both from the same place and direction.]

The bridge consists of four spans of 62 feet each, and is an imposing structure situated in the midst of beautiful natural scenery. 72 tons of steel were used in its construction and 35,000 c. ft. of granite masonry. The piers which are built on solid rock are 37 feet high, and considerable difficulty was experienced in getting the foundations down 10 feet below the summer water-level, as the river is liable to sudden rises which often burst the sand-bag coffer dams. The Nedungayam bridge will open up 55,000 acres of forest, and will provide an all–the–year–round timber extraction route. It is one of the largest Engineering projects undertaken by the Madras Forest Department with their own Engineering staff. The last revet was well and truly driven into the bridge by Mr. A. Wimbush, the Chief Conservator of Forests, and Mr. Minchin, Conservator of Forests, when the bridge was officially opened by Mrs. Wimbush on June 5th 1933.

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The Irulars.

By, C. P. Bhimayya B.A., M. F. C., 1933—35 Dn.

"*The proper study of mankind is man*".

—Alexander Pope.

Man's study of the every day life of his own kind has resulted in that branch of art termed "History". But for "History" the glories of the past would have been a sealed chapter to the people of the present and consequently there would not have been any advancement in life. For man, there is perhaps nothing on the face of earth more interesting and important than the study of the modes of life of his own kind. Whether he directs his search to the ice watered plains of the Tundras or the arid wastes of the Sahara, the dense forest clad slopes of the Himalayas or the grassnetted plains of the prairies, he will find one or other of his kind tenanting these regions. Similiarly if we direct our

study to the valleys of Bolampatty Forest Range of Palghat Division we find a set of inhabitants known as '*Irulars*'.

For a man of the towns who has chosen for his lot the company of plants animals and birds of the wilds and who in his daily perambulations comes into contact with these semi-naked, uncouth, strong, self-satisfied brothren of his, a study of their manner of life is both useful and entertaining. The Irulars have but few contacts with the inhabitants of the civilized world. Such being the case the forester in order to adapt himself to his environment should acquire a thorough knowledge of their life and manners. The short broad rose and the deep keen eyes on an oval and flat face, and the straight hair on the rounded head, go to show that the Irula is a descendant of the Dravidians. Both male and female are invariably of a dark complexion and medium stature. They are lithe, muscular and strong. They are not unlike the other hill-tribes of Southern India in appearance. In fact they have a strong resemblance to the *Kurumbars* of Wynaad and the *Soppu-Koragars* of South Kanara. They haven't any special dialect of their own but speak a rustic form of Tamil, often with an accent on the wrong syllable. Tradition tells us that they are not aboriginees of this lacality but that they are imigrants although little else is known.

The Irulars live in small thatched huts the walls of which are made of brush wood. These huts are usually situated in clusters which go to form their village. When they have to tend their crops away from home they build similar temporary abodes near the site and shift their residence from place to place entrusting their permanent abodes to the care of the young and old

who cannot do any work. Though a small sect, yet they have got nine subsects among them, each one having its own name. They are :—

1. Karatti. 2. Sambae. 3. Kuppiliae. 4. Bothara. 5. Vellai. 6. Ettoora. 7. Arumooppu. 8. Kurunakannu 9. Devana.

Among these the fifth namely "*Vellai*" is considered to be the most imporant and from this sect one man is chosen to conduct the duties of perpetuator of justice and to him all reverence is paid by the rest. Excepting this special characteristic of the "Vellai" there is no difference of caste between them, and the sects inter-marry, while marriage within the sect is opposed.

The Irulars were formerly easy going people and their natural wants were satisfied by wild fruits and roots and stream water. The principal fruits eaten were mangoes, jack-fruit, guavas, black plum or jambu, *Carissa carandas* etc. Though nawadays they at times depend on these for their sustenance, their present principal food stuffs are the cheap grains such as ragi, samai, varagu etc. Rice is a delicacy for them and is the principal food in important functions. They eat meat. Excepting pork, flesh of bison, cranes and snakes, they eat the flesh of every other animal eaten by non vegetarations. They eat all vegetables and the method of preparation of all these is the simple one of boiling with salt and chillies without any seasoning or spicing. Cereals also they consume. Drinking is not common amongst them and in olden days there was absolute abstinence from it. Women are strictly prohibited from drinking and any one of them found doing so, is liable to be flogged and kicked ruthlessly. Extraction of toddy and distillation of liquors are processes unknown to them.

The Irulars have no special mode of dress, which consists of simple clothing like that of the other inhabitants of the district. The festive "best" consists of the latest garment the individual has acquired. As such it may even be mere rags if the owner be very poor. Women are forbidden to wear bodices, as is the custom among many other hill-tribes. Their ornaments are nickel and brass trinkets. They wear bangles and rings made of these metals on their arms and fingers and bronze rings are worn on their toes. They prick holes in the lobes of their ears and expand them to a diameter of half an inch to one inch by inserting rings of metal or of palmyrah leaves.

Of gods the Irula worships many. Among others he worships malayala *Bhagavathy*, *Bhadrakali*, *Veerakali-amman* and *Mari*. In olden days the Irulars used to worship only these gods but now they have extended their homage to the gods which the other Hindus of the village worship. Both males and females name themselves after their gods as other Hindus do. No function they consider to be complete unless they do homage to their departed ancestors.

The Irulars have two festivals only. One corresponds to the "Pongal" of the Tamilians and is celebrated in January in a similar manner. On this day every one of them takes an oil bath and after due worship of their gods eats rice. The other festival comes in April after their harvest season. Then, there being an abundance of food stuffs, no thought is given to tomorrow's needs and the care-free mind devises diverse enjoyments and mirth. Then after worshipping their forefathers they feed on rice cooked in huge copper vessels borrowed for the occasion from the farmers of other communities (as their poverty does not permit them such luxuries).

Males and females alike, irrespective of age, march to the temple where after finishing their worship, the males alone indulge in a kind of dance. The females form the spectators. There is nothing remarkable about their dance. They only turn from side to side, alternately, keeping time with the music that is played. The musical instruments used consist of drums, pipes and cymbals. There are two drums, one big and another small. The bigger one is called "Dhowl" and its cylinder is moulded out of mud, while the smaller called "Mridangam" is similar to the one used in towns. The pipe is of wood that has been turned and drilled through. The cymbals are of bronze. During the dances they also keep time by clapping. This festivel is of a day's duration only. If people of other communities were to go to their house that day, they present them with raw rice and plantains. To their gods they sacrifice a goat which offering is solemnized by the presentation of cocoanuts and plantains. The goat is utilized for the general feasting.

Marriage, as previously mentioned, is inter sectional. There are two kinds of marriage and there is an imitation of the dowry system. But here the dowry is given by the bridegroom's party to the bride's, unlike the custom of other communities. The engagement is brought about by the parents of the couple. The young man's parents go to the girl's house and ask for her hand in marriage. In such requests there will be a great amount of pressure on the side of the youth's parents if the girl's side is unwilling to give her hand. Whatever it be, this occasion should always be accompanied by a decent meal at the girl's house irrespective of the results of the visitor's purpose. If the engagement is settled, the girl's father fixes a day on which the

marriage is to come up. On the particular day the bride groom's party marches to the bride's house. The bridegroom will not be one of the party. After they arrive they are duly greeted by the other party who offer them betel, nuts etc. Then the bridegroom's party give a saree to the bride and six " panams " (Equal to about Rs. 1/8/-), the latter being in honour of their departed ancestors. This being done, the combined party come down to the bridegroom's house where the prominent man selected out of the 'vellai' sect takes charge of the subsequent formalities. He receives twelve and a half rupees from the bridegroom's parents and presents the amount to the bride's parents. Then a " Thali " made of black glass beads is delivered by this man to the bridegroom who in turn ties it round the bride's neck. Then the prominent "Vellai" declares that thenceforward she is the young man's wife and partner and if she is separated from him by his decease she should be prepared to marry one of his brothers. And in case they are not willing to marry her, she should wed only him that her elders choose. Thus widow marriage with certain restictions is in vogue among them. Though the marriage system is so simple, the tie brought about is rigid and it can be broken only in exceptional cases after due grant of permission by the sectional heads. If a man is dissatisfied with his wife, he is at liberty to call forth a council of his elders and prominent men and on their declaration divorce her and claim the twelve and a half rupees. The amount will be duly recovered by the prominent "Vellai" and made good to the husband. If he divorces her without sufficient ground, he is not entitled for this amount. If the wife were to leave him whether on proper grounds or not, her parents are bound to pay the amount to the husband's party. The other

kind of marrige alluded to, involves no formalities. The young man selects his wife, lives in the same hamlet and after some time pays her parents twenty five rupees and takes her to his own home.

In former times only girls of proper age were married. Now they give in marriage even those that have not attained age. The Irulars do not tolerate social vices. If a case be proved against a man and a woman, the persons concerned will be very severely handled. A basket of cowdung or sand will be placed on their heads and they will be flogged and finally ex-communicated. The flogging will be more severe in the case of married people found indulging in such vices. Bigamy is allowed but it is not a very respectable custom of theirs. Polygamy is despised by them and disrepute is added to the character of the concerned individual.

The dead are cremated. If the husband dies one of his brothers cuts a lock of hair from the wife's head and buries it with the corpse. The "Thali" which stands for the bond that existed between them, will be untied from her neck by the prominent "Vellai" and cremated with the body. If the wife dies, the husband's lock of hair is cut by her brother and buried with her body. It is strange to observe here that this is the unique occasion when both males and females indulge in dancing. They dance in separate groups. There will be only one set of musical instruments for both the parties played on the occasion.

Women, during child birth and the period of menses are not allowed to enter the hut. All the cooking will be done by the husband alone and she will be served her share on the verandah of the hut where protection will be afforded to her by temporary walls of *Grewia* twigs.

It is really surprising to note that the Irulars have no physicians among them. For all ailments they have a strange cure. A mixture of ragi flour and water is boiled and they smear their whole body with the resulting paste and bask in the sun for some time. Then they take a bath and the treatment is complete. They believe in sorcery and witchcraft and call magic to their aid in case of certain illnesses. They have no belief in ghosts. Supersititious beliefs they have, for, they believe that unless they repeat a certain verse near their village approach on their way from the fields after sowing seeds, the crops will not be satisfactory or rather will not come up at all.

These people have a leaning towards agriculture nowadays and raise both wet and dry crops. It is on account of their increasing liking for tilling the soil that they turn out such an amount of useful work in the Ponam working circle in Bolampatty range. The labour is obtained from these tribes in this range. But for these hill tribes the Forest Department would have been at a loss to carry out its exploitation as perfectly as it does at present. Show these men the most impenetrable and inacessible spot in a forest and ask them to fell a tree there and in a second they will be there, hacking like the blacksmith at his anvil, in his mettle, feeling quite at home and forgetting everything except the work on hand.

——(o)——

COLLEGE NOTES.

1. The Madras Forest College Athletic Sports, 1933.

The annual athletic sports of the Madras Forest College for 1933, were held on Saturday the 28th October, on the college ground. Though the previous days were rainy, the weather was clear and pleasant on the sports day, and enabled us to go through the full programme. It also attracted a greater number of spectators than usual.

A new item this year was the two-mile cycle race. Two college records were broken, the shot put and the the invitation half mile. The "Richmond cup" for the highest aggregate number of points was won by C. M. John, — a *junior* student, with 13 points, Senior student B. H. Patil being runner-up with 12 points. The college is to be congratulated on their winning this year in the tug-of-war with the Police Recruit School, who easily won the previous year.

The sports over, Mr. A. Wimbush, I.F.S., the Chief Conservator of forests, kindly distributed the prizes, and the function terminated with three cheers to the Chief Conservator and the guests.

Detailed results are as follows:—

High Jump:

I. A. Sheriff. .... 4 ft. 10 in.
II. C. M. John.
III. P. Narayana Nayar.

Hundred yards:

I. C. S. Mannadiar ....
II. B. H. Patil.
III. { K. B. Aiyappa / Mir Muhammad Ali.

Invitation Half-Mile:

I. Stanes' European High School....2 min. 11 sec.
(College Record........... 2 min. $15\frac{2}{5}$ sec.)
II. Municipal High School.

Quarter-Mile:

I. K. B. Aiyappa.....................$58\frac{3}{5}$ sec.
II. C. P. Bhimayya.
III. C. B. Pemmiah.

Throwing the cricket-ball :

I. K. Krishnamurthi..............85 yds., 2 ft., 4 in.
II. C. J. Muthanna.
III. N. V. A. Rebeiro.

120 yards Hurdles :

I. C. M. John. ....20⅖ sec.
II. B. H. Patil.
III. C. S. Mannadiar.

Shot-Put :

I. Mir Muhammad Ali....................27 ft. 7 in.
(College Record, 21 ft. 3 in.)
II. N. V. A. Rebeiro.
III. C. B. Pemmiah.

Half Mile :

I. B. H. Patil.................. 2 min. 20⅕ sec.
II. { N. C. Madappa. / C. P. Bhimayya.

Long-jump :

I. C. M. John....................18 ft. 2½ in.
II. C. P. Bhimayya.
III. Mir Muhammad Ali.

Peons' Race : 100 yards :

I. Syed Ali.
II. Krishnasami.
III. Ali.

Mile :

I. N. C. Madappa..................5 min. 31⅗ sec.
II. K. M. Atchayya.
III. B. H. Patil.

Servants' Race : 100 yards :

I. Govinda Rao.
II. Ganesan.

Relay Race :

Winning Team : *Kerala.*

Cycle Race : Two miles :

I. V. Govinda Menon.
II. N. P. Chirukandan.
III. A. Sheriff.

Tug-of-war :

Won by Forest college.

2. Swimming race at Nedungayam for the senior (1932–34) division.

The senior class of 28 students was divided into three groups according to proficiency. Class I, those who could swim 6 chains, class II those who could swim 3 chains, and class III those who could swim one chain or less. Ten students were fit to come under class first, five under class second, and the rest (ie, 13 students) under class third. It was decided to have a separate swimming race for each of the three classes and 15th of December was fixed for the races. Courses were laid out in the pool immediately below the Karumpuzha bridge at Nedungayam, a course of 100 yards for class I, 50 yards for class II, and 20 yards for class III, the race to be swum downstream. A raft (of 30 bamboos) was also kept handy for use if necessary. The 100 yards race was to be the "Medal race," that is, a medal to be awarded to the winner of the 100 yards race.

The medal race was swum at 5 P.M., on 15-12-1933. Rao Sahib K. G. Belliappa, Senior Instructor, was the starter and the Principal the judge. There were 9 entries for this race Viz, students M. Narayana Nambiar, P. K. Sankara Menon, B. H. Patil, N. P. Chirukandan, V. Panchapakesan, M. D'Souza, K. S. Wodayar, Syed Ali, and K. Krishnamurthy. C. B. Ekambaram, one of the best ten swimmers did not enter owing to fever. Owing to indisposition on the day of the race, Krishnamurthy did not swim. The other eight students swam the race. M. Narayana Nambiar came first, time taken being two minutes; P. K. Sankara Menon came second; he was a very good second, the difference between him and the winner being only a couple of yards. B. H. Patil came third. Syed Ali did not complete the course.

As the practical examination in silviculture was conducted by the Working Plan Conservator immediately before and immediately after the medal race and also during the whole day on the 6th, the other two races, Viz., for class second swimmers and for class third swimmers could not be swum for want of time, the camp at Nedungayam having broken up on the night of the 16th December 1933.

3. Foot ball.

Foot ball was one of the favourite college games from the beginning, and for some unknown reasons it had a break in its existence for some two or three years. In August 1932, when the present Seniors joined the college, they resuscitated it. But chiefly due to a lack of funds, it could not be given the encouragement it deserved. With the advent, however, of a fresh batch of good foot-ball players, in August 1933, its popularity increased considerably.

The first match we had to play with outsiders was with the Agricultural College. Unluckily for us, two of our good players were ill at the time. The teams were well contested, and we had a tough fight. With great difficulty we won by one goal. Of the matches played by us with the Agricultural College this year, it was only in Foot-ball that we could claim victory.

In October last, we had an opportunity of taking part in the " National Health and Baby Week foot-ball Tournament." Unluckily, again, one of our good players were ill, and we had to face in the first round at the Stadium grounds a good town-team — the " Coimbatore athletic club," one of the best in Coimbatore, composed of professional players of eminence. Our players defended the goal bravely in the first half time, and the opponents scored one goal. In the second half time we were tired, and as we were unaccustomed to that type of ground we lost by three goals. It is however to our credit that we played so well against such excellent and professional players. Mention must be made of Junior student Mir Muhammad Ali, who did particularly well in the centre half back, and Govinda Menon who defended the goal admirably.

— William Vores.

4. Rao Sahib P. Sankunni Menon, M. R. Hons. :—

We are glad to note the name of Mr. P. Sankunni Menon, (Range Officer, Engineering Branch) figuring in the list of *Rao Sahibs* in the New Year Honours, 1934. He is perhaps the youngest in the subordinate Forest Service to receive such a distinction. We offer him our hearty congratulations.

Garcinia Cambogia — its utility.

By, N. C. Madappa, 1932—34 Division.

Vernacular names :— Malayalam — *Kodapuli ;* Kanarese — *Manathuli*; Coorg; *Panapuli, or Ponakepuli.*

This is a moderate sized evergreen tree of the Western ghats, growing in elevations from 1500 ft. to 5,000 ft.

Uses:— The uses are (1) the yellow gum which the trees exude when blazed, mixed with spirits of turpentine forms a beautiful varnish. (2) From the juice of the rind of the fruits vinegar of thick consistency is prepared. (3) An oil is got from the kernel which is also medicinal and serves in place of coconut oil and ghee. (4) Besides these the trees are used as fuel and the fruits serve as a sort of leech proof ; i.e. if the juice of the ripe fruits is rubbed on to the legs, leeches cannot get up as the taste is too acid.

Extraction of vinegar :— The preparation of vinegar from the fruits is as follows : The fruits which generally ripen in July and August, are collected by plucking from trees, or collecting them from stems that have been felled or off the ground after they have fallen. They are then put into a cylindrical basket with both ends open, and allowed to rot : The basket is kept on a sloping platform of corrugated zinc sheet or the sheathing petioles of banana. If it is of the latter, they are placed in concave and convex method so as form a corrugated surface. At the lower slope of the platform, a contrivance is fittted to catch the liquid that flows on the

surface and to empty it to a receiver, which is placed at one end.

As soon as the basket is filled with the fruits the the upper opening is closed. The size of the basket will depend on the quantity of the fruits available. When the basket is closed, the fruits are allowed to rot in it. The rind decays after 5 or 6 days and juice comes out of the basket and flows to the receiver.

This juice is sweetish sour in taste and thin in consistency being only a little thicker than water. In this state the juice does not keep. So it is made viscous by boiling, whereby the water is driven out by evaporation and the residue is a thick dark brown viscous fluid called "Kachupuli" in Coorg. It is used as vinegar and also for medicinal purposes.

Yield :—A basket with a capacity of 12 c. ft. of fruit gives 2 gallons of crude juice ; this when boiled properly yields 3 to 4 bottles of vinegar. To get the above said quantities of fruits we may have to collect fruits from 2 to 4 trees.

Use of the Vinegar :— The chief use of this vinegar is in cooking. It is used in place of tamarind or as a substitute for vinegar. In Coorg especially where tamarind does not grow man has found out the use of these fruits for the same purpose. But they dry the rind of the fruit and use it with condiments. Besides this, the vinegar is used externally, mixed with slaked lime in cases of mums, headache etc.

Extraction of oil from the Kernel .— When all the juice is collected the basket is removed from the platform and the seeds are picked out from the decayed material. Then the seeds are left for drying and the outercoating the mesocarp is removed, and the kernel is taken and fried. The kernel is then ground to a paste and mixed with sufficient quantity of water. This grind is then boiled for an hour or two, and then the whole thing is allowed to cool. As the liquor cools, the oil which was yielded by the seed and get mixed with water during the boiling settles on the top of the liquor. The oil is then taken out by a process of decantation. It is again boiled

to drive off all water that was decanted with the oil. This refined oil solidifies when cooled and has the colour of cream.

Use of the oil:— The oil is used for burning and also in cooking. It is said that this *Garcinia* butter has the same properties as pure ghee and is used as such namely for cooking and also in medicine specially in severe cases of dew crack.

Report on the Administration of the Forest Department in the Cochin State for the year 1931–32.

We acknowledge with thanks, receipt of a copy of the above. The universal economic depression of the year under review is reflected here, as elsewhere, in the severely restricted markets for timber and other forest produce from the Cochin State Forests, with the result that stock to the value of about two lakhs of rupees remained unsold at the end of the year. The output from the forests was accordingly limited and rigid economies were effected. The revenue was less by Rs. 1,42,017 than the budgeted estimate, and expenditure was correspondingly reduced by Rs. 27,354. In spite of all adverse conditions, however, the department yielded a creditable net surplus of Rs. 1,21,037 at the close of the year. Extraction of produce continued to be operated, as in previous years, by seigonirage contracts, chiefly for softwoods, fuel, and bamboos, and by the system of "departmental collection contract", by which the contractor is given a percentage of the sale proceeds of the collected material, and which latter is reported to have worked on the whole very satisfactorily. By departmental agency, some 3,892 candies (1 candy being equivalent to $12\frac{11}{27}$ c. ft.) of timber were extracted, of which 3,178 candies were Teak, and 450 candies of Rosewood, other species having practically no demand. A contract was entered into with the Anamalai's Timber Trust by which the Trust undertook to deliver 7,000 candies of timber from the Anamalais (in British India)

for transport *via* the Cochin Forest Tramway to Chalakkudi during the coming year. The State Tramway is the chief means of transport of timber from the Orukomban working circle, which contains some superb timber forests. A financial statement for this working circle shows that after setting off a sum of Rs. 41,651 on account of interest on the total expenditure, the net profit for the year was Rs. 31,190. It is also interesting to note that during the period of 26 years' running of the Tramway, the O. W. C. forests have yielded a total net profit of Rs. 13.75 lakhs, interest having been provided at 2 per cent on the capital expenditure. The administration of the Department was in the hands of one Conservator of Forests, two Assistant Conservators of Forests, and two Range Officers certain of which officers held charge of more than one office on the score of retrenchment. A Working Plan Officer joined the Department during the year, and following upon a survey of existing plantations (about 3,414 acres) a working plan is to be drawn up for them in 1932–33. Cultural operations call for no special comment, and these have evidently been restricted to necessary maintenance works of weeding, fire-tracing etc. in most places. Elephants are an indispensible asset in the service of the Department, and these were 14 at the close of the year. The Department have not been fortunate in their record of captures; out of 9 falls during the year 3 old cow elephants were liberated, 2 died in the pit, and 2 succumbed subsequently. It is interesting to note that during experimental work in connection with lac cultivation infection of hosts was complete in spite of the heavy rainfall and healthy lac secretion is increasing satisfactorily. M. R. Ry. K. Ramunni Menon Avl. who was in charge of the Department entered on leave preparatory to retirement during the year.

—P. W. D.

EXTRACTS.

1. The parasitic habit of the sandalwood tree :

BY CHARLES S. JUDD. *Proceedings Hawaiian Academy cf Science*, Bernice P. Bishop Special Publication 20, Honolulu 1932, pp. 5–6.

" The *laau ala* or fargrant heartwood of the Sandalwood tree enabled the first king of Hawaii to start a profitable trade with China with such success that in one generation he succeeded in leading his people from barbarism to civilization.

" The Sandalwood trade was at its height from 1810 to 1825 and ceased in 1840. It led to extravagant spending on the part of the king, and to oppression of the common people and to the decimation of all the large trees in the islands, and finally ended in Boki's disastrous expedition to Eromanga from which only 20 people returned out of the 500 who originally set out.

" Contrary to general belief, the Sandalwoods in Hawaii were not exterminated but are still found on all the larger islands. Though in India there is only one species, which produces probably the most valuable wood in the world, botanists recognize in Hawaii 8 distinct species and 3 varieties.

" The commonest species (*Santalum freycinetianum*) is rather small and insignificant with curling leaves and brittle drooping branchlets, and grows very slowly in well - drained soil in the drier regions. The only fragrant part of the tree is the oily heartwood.

" Very little is known about the parasitic habit of the Hawaiian Sandalwoods, but studies made in India throw considerable light on the subject. The actual transference of sap is made by means of a sucking organ, the haustorium, which attaches itself to the root of the host and by breaking down the cortical cells makes direct connection with the fibro-vascular cylinder and transfers the stream of salts and water through vascular strands to the Sandalwood. Studies now being conducted in Hawaii aim to determine whether the Hawaiian species are true parasites and how they may be propagated successfully and in quantity."

2. The Hoover Dam :

Construction work on the Hoover Dam on the Colorado River is progressing satisfactorily. This dam will be the largest in the world and will hold up more water than any other

artificial reservoir. A description of it is given in *Engineering* of September 1. The Colorado River forms, for some distance, the boundary between the States of Arizona and Nevada and farther down it separates the former from California. The Boulder Canyon project is a Federal Government undertaking and as the Colorado watershed extends into Utah, Wyoming, Colorado and Mexico, seven States are affected. The water impounded in the dam will be used both for the production of power at the site and for irrigation purposes for lands at a lower level. The Imperial Valley in Southern California suffers from water shortage, from floods and from the silt they bring down. The great reservoir will enable the flow to be controlled and the avoidance of floods will prevent silt being carried down in troublesome quantities. It is estimated that silt is being deposited at present at the rate of 22 million cubic yards annually, the cost of clearing the canals amounting to more than a million dollars. The reservoir will cover an area of 145,000 acres and will have a capacity of 30,500,000 arce-feet. The scheme includes the construction of a new canal 80 miles long to the Imperial Valley. Unlike the present canal, none of it will be in Mexican territory. The hydro-electric power devoloped will be 620,000 horse power. Tha City of Leo Angeles and the Southern California Edison Co. jointly will operate the power plant and distribute the energy in definite proportions to the city and various States and companies.

—*Nature*, *14–10–33*.

3. A Giant Electric Clock :

Electric clocks have proved a great boon to many householders in the neighbourhood of electric mains. Their timekeeping qualities are far superior to those of ordinary clocks and as they need no compensating devices and require absolutely no attention, they are much more economical. They are beginning to be used widely for advertising purposes. In Paris a giant public clock has been erected on the Eiffel Tower. It is about half-way up the tower and has two dials each 20 metres in diameter. Although it shows the time in the usual way, it is not fitted with movable hands. Radial rows of electric lamps are provided aud these are switched on one after the other and thus indicate the time. The markings of the dials at the five minute intervals are composed of illuminated circles made of green and red lamps, It is thus quite easy to distinguish the position of the main 'numerals'. At the quarter hour intervals the minute hand position is marked by sixty radial rows of red lamps which start at the centre and run to the edge of the dial. The hours and half-hour intervals are

indicated in a similar way by 24 rows of blue-white lamps. In addition to the indication of the time given by the 'hands', a powerful light shines for two seconds at each quarter of an hour. The initiative for the erection of this novel clock is due to M. Andre Citroen. It also serves as a conspicuous advertisement; big vertical 'Citroen' inscriptions appear on the sides of the tower not occupied by the dials. They light up each time the minute hand of the clock reaches a five minute mark.

—*Natnte, 14–10–33.*

4. Insect Transmission of Spike-Disease.

The cause of the spike-disease of Sandal, which has seriously affected forest revenues in southern India for more than thirty years, has eluded prolonged investigation. The work of Coleman in 1917 indicated that the causal organism was a filterable virus which was transmitted by insects, but the entomological investigations undertaken at the time were not productive. During the past five years, studies by the Mysore Agricultural Department, the Indian Institute of Science, the Madras Forest Department, and the Forest Research Institute at Dehra Dun have confirmed and extended Coleman's conclusions and established the insect-borne nature of the disease.

Entomological work was commenced in 1930, as part of the programme of the Forest Research Institute, under the direction of Dr. C. F. C. Beeson, forest entomologist. Dr. Beeson felt that a careful quantitative survey of the insect fauna of sandal and associated plants would save much fruitless experimental endeavour, as an analysis of the morphological, ecological and numerical data so obtained would permit the selection of a small group of probable vectors when considered in relation to the peculiar characteristics of the disease and the factors affecting it. He also recognised the fact that such a survey would provide a unique contribution to indian entomology, as it would represent the first extensive study of the fauna of a single species of forest tree in the East.

The survey has been productive in both these respects. With the co-operation of numerous specialists, a large number of systematic papers, incorporating descriptions of new species and data on distribution, host-plants and seasonal and relative abundance, is in course of publication in the *Indian Forest Records*, while several papers on the morphology and bionomics of important sandal insects by Mr. N. C. Chatterji (the officer in charge of most of the field work) are also in the press. Transmission studies were guided at an early stage of the inquiry by the selection of a small group of probable vectors, and

a critical discussion of the various hypotheses affecting the problem, a preliminary account being published by Mr. Cedric Dover early in 1932. This paper began the series of reports on the entomological aspects of the problem of spike--disease and, with an introductory note by Dr. C. F. C. Beeson provides a more detailed description of the history, objects and general results of the inquiry than is possible here.

Among the insects suggested as probable vectors of the disease was an inconspicuous jassid known as *Moonia albimaculata*, Distant, which Mr. Dover regarded, for reasons stated in his paper, as the most likely vector. Attention was also directed to the importance of aphids as likely carriers. Some argument attended the selection, but transmission studies have now supported it. A paper on insect transmission of spike-disease by Messrs. M. Appanna and C. Dover (which will be published shortly in the *Indian Forest Records* shows that a large number of transmission experiments with a variety of suctorial and mandibulate insects was unproductive, whereas experiments with *Moonia albimaculata* yielded three positive results and produced spmptoms in other cases which are regarded as likely to develop into those of typical spike. The three plants in which the symptoms of spike-disease have been produced by exposure to *Moonia albimaculata* are inseperable from typically spiked plants on symptomatic grounds, and samples from one of them have also answered important bio-chemical and cytological tests for the disease. The nitrogen content (which was tested by Mr. Y. V. S. Rao, of the Indian Institute of Science) and the starch content were both much higher in the samples, as is generally the case in spiked plants, and the intracellular inclusions characteristic of spike and other virus diseases were also found in leaf-sections by Mr. M. J. Narasimhan, of the Mysore Agricultural Department. The transmission by grafting of the symptoms produced by *Moonia* remain to be established, as grafting tests were only recently commenced. There appears to be little doubt, however, that the three infected plants are genuinely spiked.

When the transmissibility of the disease produced by *Moonia* is established, it will bring to a close and important phase of the inquiry on spike-disease, as with the discovery of the insect transmitting it we shall be able to proceed to a critical study of the way in which it can be controlled. The incrimination of *Moonia* as the vector of spike is of more academic interest, as spike-disease and peach yellows were, until very recently, regarded as exceptions in the 'yellows' group of

viruses, the members of which are transmitted by grafting and suctorial insects chiefly jassids. Dr. L. O. Kunkel has recently established the fact that peach yellows is transmitted by the jassid, *Marcopsis trimaculata*, and the present result therefore removes the last exception and makes the 'yellows' diseases a compact group limited by well-defined characteristics. It is of interest to note here that Dr. Quanjer's paper and the work of Drs. K. M. Smith, L. O. Kunkel, and H. H. Storey indirectly but strongly influenced Mr. Dover's selection of probable vectors, and that the experimental programme owes much to their publications and support.

In so far as aphids are concerned, only seven experiments were possible, one of which has yielded a result which is suspected to be positive. Unfortunately, this experiment was complicated by the presence of thrips, but it is believed that these insects did not prejudice it as they lived only for a short time and the plant was not in flower. The result is being tested and further experiments are in progress, but it is believed that even if aphids are incriminated as vectors, they can only be regarded as of secondary importance in the spread of spike, as they are very rare on sandal. Moreover, aphids appear to be peculiarly fitted for the transmission of virus diseases under experimental conditions.

These satisfactory results are the outcome of collaboration between several research organisations with the financial support of their respective governments. They have now to be translated into practical sylviculture, and it is hoped that the forest departments interested will be able to allot the additional funds required for this purpose.

—*Nature 14–10–'33.*

5. Preservation of Wild Life in South India:

(*Contributed.*)

"The murder of a wild animal species consists in taking from it that which man with all his cunning and all his preserves and breeding cannot give back to it—its God-given place in the rank of a Living thing. Where is man's boasted intelligence, or his sense of proportion, that every man does not see the monstrous moral obliquity involved in the destruction of the species!" So wrote William Hornaday, author of "Our Vanishing Wild Life," and his words are quoted in the excellent little pamphlet— "Live and Let Live" — issued by the Association for the Preservation of Wild Life in the United Provinces—the First Society of this nature to be formed in India.

2. The Association quite rightly describes the saving of Country's fauna as a National task and as "Everybody's business." The first task to be tackled is the education of public opinion in the right direction, for, until this is accomplished, the heart of the people will not be in the work, the issues involved insufficiently appreciated, and little good will result.

3. Before the close of this year it is hoped that a Society for the Protection of Wild Liie in South India will have come into being and its membership will probably be thrown open to all lovers of Wild Life, animals, birds, etc., and to the large number of people who, not content to see species of their country's fauna exterminated, will eagerly assist in the great work of putting a stop to the ruthless destruction that is now going on. Few realise the gravity of the situation and how near to extinction some species are; in fact it may be said that the Nilgai or Blue Bull, and the Cheetah or Hunting Leopard, are already extinct in South India.

4. The chief cause of the present appalling destruction of Animal and Bird Life is the wide-spread issue of guns for (1) protection and sport and (2) crop protection. To many minds "Sport" seems to be the killing of wild animals and birds of either sex, mature and immature. It is a matter for regret that these destroyers are often the more educated members of the public, owning guns for "Sport" and "Protection." Considerable damage is also done by the poachers, men who make a good thing by selling the flesh, skins and horns of animals, illicitly killed either by stalking or by sitting up over pools and saltlicks. In many areas up to a few years back holding large numbers of deer, the Sambhur and Chital are now uncommon, while in parts of the plains Black Buck and Chinkara have been nearly or entirely wiped out. Large numbers of birds are sold, netted aud trapped, both alive and dead, in season and out. Unless opinion is roused, the hideous slaughter will continue till nothing is left to kill.

5. It can be safely said that 90 per cent of the guns issued for crop protection near Forest Reserves are used for poaching. It is a sad fact that Police and Forest subordinates are too often indifferent to what is going on. The former do not act promptly on information supplied in regard to the possession of illicit guns; and the latter generally shut their eyes to the slaughter carried on by poachers in their beats: but it must be remembered that, so long as the public, as represented by the villagers, are on the side of the poachers (supplying them

with meat as he does), the Forest Guard, or Watcher, has an unenviable task, and his unpopularity in any village is bound at length to lead to his downfall. It is a matter for regret also that Magistrates seem unwilling at present to inflict really deterrent sentences on persons found in possession of illicit firearms and caught poaching; much sterner sentences will make a difference; but no law can improve matters to any great degree unless the public is morally convinced of the justice of the measures taken and wholeheartedly supports their enforcement. The public are the final guardians of their wild life, and without their co-operation legislation alone will not succeed in curbing the activities of poachers, who are the greatest destroyers.

6. The Zamindars and landholders can do great useful work by joining the Society on its formation and in carrying out propaganda among their tenants, who should be taught that the wild life of their country is a sacred heritage, that, with the deer (the natural prey of the Carnivorae) exterminated, the tiger and the panther will take an even greater toll of their live stock; and without their wounderful bird-life their crops will be at the mercy of innumerable vermin. The people should be encouraged to observe close seasons on both private and Government land for both animals and birds. There is no desire to protect crop-marauding animals, and there should be no mistaken idea on this score.

7. Further, to quote again from Hornaday, it should not be difficult for the more educated to realise that "the animals now in jeopardy are links in the chain of Evolution; and we are yet very far indeed from understanding the agencies which have moulded the often marvellous adjustments they display in relation to their environment, and the key to these agencies is to be found in their living bodies that we may follow our conclusions to their logical end. The more we learn of the mysteries of Life in all its manifestations, the better shall we understand our own bodies . . ."

8. Many people are of the opinion that the condition of wild life in the Government Reserves gives no cause for anxiety; this is the case in only very few localities, however, forests still inaccessible to the poacher; and with the increase of motors, better communications, and modern firearms and spot lights, the time is not far distant when no quarter of the Forests will be safe from the poacher's destroying tactics, and as he finds his victims harder to bag, so deeper does he penetrate into their last sanctuaries.

9. Ceylon has had a Wild Life Protection Society, and its game sanctuaries, working for years; the United Provinces have a similar Association; let the appeal of the Society proposed to be formed in Madras (to cover South India) before the year is out not fall on deaf ears, for the existence of a fauna, the country should be proud of, is at stake. Let the love of Nature be engendered in the hearts of the Youth in Schools, and Natural History (taught with interesting coloured and illustrated text books) be made a compulsory subject. The greater the Membership, the more influential and powerful the Society will be, and the success of its work for the safety of the country's fauna will depend on public support.

6. Tallest Wooden Building:

It is gratifying to learn of instances in which wood is not yielding ground to substitutes. There is, for example, the new German wireless tower erected at Rothsurben, near Breslau, which, after several months of successful tests, has recently passed the final inspection. This tower, which is 460 feet high is built entirely of wood and is claimed to be the tallest wooden structure in the world.

It is stated that German engineers combed the world for the best structural material available and ultimately chose pitchpine. The tower was erected under the system of modern connectors for timber construction, recently introduced into the United States by the National Committee on Wood Utilization and the Forest Products Laboratory. At its base the tower is 72 feet square, tapering at the top to about 7 feet.

There were various reasons why pitchpine has been given preference over European woods. The German engineers, with characteristic thoroughness, found that pitchpine, or southern pine excelled all other woods in homogeneous strength properties and that large dimensions relatively free from knots and defects could be secured. The high content of resin furthermore acts as a natural preservative, insuring long life. Most important of all, southern pine is not apt to check and split. In addition the shrinkage factor in this timber is recognised as being materially lower than that of similar woods.

— (*Timber Trades Journal*, 19th Aug. 1933).

7. Effect of Yeast Extract on the Growth of Plants:

Our observations were first made on the sunflower plant (*Helianthus anuus*, Linn.) and then extended to other species The plants were raised on soil or sand and treated with organic

manures or mineral fertilisers. Aqueous extracts of different biological products were injected directly into the plants so as to avoid the possible effects of the products of their decomposition in the soil. A number of interesting observations were made, but the following illustrate the type of results obtained during two successive seasons :

Plants grown on soil : treated with farmyard manure.

Fluid injected.	Percentage of plants that flowered	Average number of flowers per plant.	Average weight of flowers per plant (gm)
Yeast extract	75.0	4.1	6.9
water (control)	44.0	1.8	3.7

Plants grown in washed sand ; treated with complete minerals.

Fluid injected.	Average dry weight of plant (gm.)	Average dry weight of flowers (gm.)	Percentage weight of flowers to whole plant.
Yeast extract	39·24	9·64	24·6
water (control)	25·21	3·29	13·1

Fairly mature plants responded better to injection of yeast extract than tender ones. Similar, but less marked, effects were observed when extracts of farmyard manure or soil or sewage effluent (activated sludge) were injected into the plants, while extract of dried blood merely increased the total weight of the plant without appereciably affecting the production of flower and seed.

In view of the practical significance of the above findings, the observations have now been extended to a variety of agricutural and horticultural crops. The effect of feeding a number of new substances, both by themselves and in combination with different inorganic salts, has been followed. The nature of the constituents responsible for the effects observed and the mechanism of their action are also being studied. It is hoped that the results of the above and related investigations will be published at an early date.

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—*Nature*, 4-11-33.

8. Germinating Coconuts on a New Volcanic Island, Krakatoa:

In the month of January 1932, one of the officials of the volcanological service, who paid a vist to the new island, brought me some seedlings, picked up by him on the beach, and I had myself an opportunity of visiting the island in the month of May of the same year. It was then 40 metres high and comprised an eccentric hot crater lake and some solfataras on its margin. The wall of this lake was on one side 40 metres high and very steep, and sloped on the other side gently to the beach, which was more than 1 km. long.

On this beach, which consisted of black sand, a great quantity of pumice and logs was washed ashore and many plant seeds had already germinated. I found many seedlings of common drift plants and of plants of the *Barringtonia* association. The following seedlings were found: *Pandanus tectorum, Canavalia rosea, Ipomoea pes-caproe, Barringtonia speciosa, Terminalia Catappa, Xylocarpus granatum, Pongamia pinnata,* and 41 germinating coconuts.

This last find was of special interest, as in this case there could be no question at all whether the nuts had been planted or not. No native, with the exception of the coolies of the volcanological service, had dared to land on this still active and treacherous crater, nor was there anything for them to find there. Moreover, the coconuts lay on the beach and were mostly unburied, lying between the pumice and the logs in the same disorderly manner as the seedings of the other plants, as to which no one questions their distribution by the sea. Some coconuts were just beginning to sprout; others had already formed a bunch of leaves and were rooted firmly in the soil. They were here in exceptionally good condition, as the crabs, which often ruin the germinating nuts, were not present on the beach. We thus find on this new island a strong proof of the ability of the coconut, when washed ashore, to establish itself on the beach without human aid.

After a rest of some months, the crater again started into activity in November and the poorly-developed vegetation was covered over by the ejected volcanic material.

W. Docters vin Leeuwen,

—*Nature 28-10-33.*

9. Indian Coracles:

Mr. James Hornell contributes to *Man* for October an account of the coracles still extensively in use on the rivers Cauveri, Bhavani and Coleroon in the Coimbatore and Tanjore

districts of Southern India and on the Tungabhadra, the boundary between British India and the state of Hyderabad. Within the area of coracle distribution, boats or canoes are not in use. The Indian species differs from that of Iraq, Wales and Ireland. The Indian form is circular in plan; that of Iraq, though circular, has convexly curved sides, so that the diameter at the mouth is less than at the equator; the Welsh and Irish forms are bilaterally symmetric, the Irish being actually boat-shaped. Only in Ireland are coracles used on the open sea. The Indian coracles are of three varietal forms, each characteristic of its separate area. All, however, are fundamentally of the same type, differing only in detail, the differences being due to purpose or the conditions of the environment. The most simple are those of Coimbatore and Tanjore, which are about six feet in diameter, flat and saucer-shaped and very shallow. The framework is built up of lengths of split bamboo, woven at the bottom into a stout meshwork. The sides are strengthened by a rude gunwale of unsplit bamboo. Ox hide is stretched over the outside of the framework. A stout pole about eighteen inches long, fixed to one side of the bottom, serves as a seat and a support when the coracle is carried. The Tungabhadra coracles are of two varieties, one being lighter than the other. They are used as ferries. They are definitely bowl-shaped and deeper than those of Coimbatore. For the larger forms, curved unsplit bamboo ribs give strength. The Kurnool (lower Tungabhadra) coracles are the largest and finest in India, being from ten to fourteen feet in diameter. The largest are said to be capable of transporting fifty men or forty bags of grain. They are more carefully constructed than either of the other forms. Elaborate ceremones attend their launching.

Nature, 28–10–33.

10. Malaria: Its prevention and cure:

The third general report of the Malaria Commission published by the *Bulletin Trimestriel de l'Orgauisation d'Hygiéne de la Sociètè des Nations* (Vol. II, No, 2, June 1933), reviews the methods now used in the treatment of malaria. We give below some of the conclusions of this study, which is of fundamental hygienic importance, particularly in tropical and subtropical regions.

The commission emphasizes that from a medical point of view the question of rivalry between natural and synthetic drugs does not arise. The production of synthetic quinine, or of other synthetic drugs having an action and toxicity suffícently near to those of quinine for them to be used as substitutes for

quinine, would constitute no progress for the clinical treatment of malaria. From the medical point of view, what is required of a new product is that it shall be effective in curative and preventive treatment wherever quinine is unobtainable, and that its use shall not entail risk of producing toxic symptoms; the latter condition is as important as the former. The various methods may be summarised as follows.

Treatment against the sporozoite form (prophylaxis proper).—No remedy is known which when taken in harmless doses can be guaranteed to act as a genuine prophylactic agent.

Clinical prophylaxis.—The Commission is of the opinion that for this purpose quinine is effective and constitutes the best remedy. The best method of use consists in administering a daily dose of 0 4 gm. This dose should be taken during the duration of the stay in a malarial region and, to prevent relapse, for several months afterwards. In a daily dose of 1 tablet (0.1 gm) atebrine is effective, even as a clinical prophylactic agent; but it cannot be used habitually for this purpose because even in this small dose it rapidly causes a yellow coloration of the skin.

Treatment of the attack.—The Commission considers that it is not wise to treat an attack of malaria by more than one specific remedy at a time during the acute stage, and expressly emphasizes the opinion that plasmoquine should not be used for the treatment of any form of malaria. Therefore quinine or atebrine must constitute the specific remedy. However neither one nor the other entirely fulfils the requirements of a *therapia sterilisans magna*, and the Commission does not consider that *for general use* either of these product should be prefered to the other The great advantage of possessing two remedial agents is that in cases which prove refractory to treatment by one the other can be tried. In the treatment of acute attacks of tertian and quartan fever quinine and atebrine seem nearly equally effective, but in cases of subtertian malaria atebrine is clearly superior to quinine. It does not follow that quinine cannot give good results or that it should always be replaced by atebrine in the treatment of acute attacks of infection by *P. falciparum*. In this connection and in correlation with several other problems of therapeutics, the Commission lays emphasis on the fact that observations show that the treatment of malaria in all its forms is more a local and individual problem than has been realised hitherto. The Commission therefore suggests that the research workers of all countries should determine, as far as possible by carefully controlled experiments, the susceptibility of the various local strains of the parasite to quinine and atebrine.

The Commission considers that curative doses of quinine or atebrine should be administered during more than seven consecutive days for the treatment of an attack, and that a five days' treatment will often suffice.

Treatment for the prevention of relapse.—There is not at present, it would appear, a remedy or a combination of remedies which is able to destroy all the parasites in the human host and thus to prevent any possibility of a relapse. Such a result cannot be guaranteed either by treatment with quinine or atebrine alone, or with either drug mixed with plasmoquine, with any intensity or duration of treatment. For this reason and for those indicated above the Commission does not consider that it is in the interest of persons suffering from the disease to endeavour to combine a treatment for the prevention of relapse with a treatment for the cure of an acute attack. It is considered that preventive treatment against relapse should begin at earliest one week after the termination of the first attack.

The Commission has also studied the question of whether the percentage of relapses can be reduced more effectively by using quinine mixed with plasmoquine than by using quinine alone. It is observed that as the mixture does not give rise to any new chemical combination in the stomach each drug exercises only its own specific action aud that doses of plamoquine administered thus with quinine are inferior in action to those which produce a specific effect on the sporozoites and the trophozoites during the incubation period of the disease or on the merozoites and schizonts during the attack proper. This being the case, and as it is known that quinine does not prevent relapses, the suggestion that it is possible to reduce the number of relapses by administering ineffective doses of the two drugs mixed, is clearly paradoxical. Studies are also reported which indicate that the percentage of relapses may be reduced by the addition to quinine of non specific medicaments such as bicarbonate of soda ; according to the other writers the proportion of relapses following treatment by plasmoquine plus quinine reached 100 %. It is mentioned in this connection that the percentages of relapses following any specific treatment (and even that of relapses not preceded by any specific treatment) varies greatly in different countries and in different regions of the same country and from one individual to another, and this statement is accompanied by a short descriptlon of certain of the factors to which this variation may be attributed. The problem is therefore one which cannot be easily solved by means of clinical experiments in the field, that is to say in conditions including a number of unknown factors.

For these reasons and in view of the cost of the various systems of treatment, the Commission does not at present recommend the adoption of a method of treatment based on the use of quinine accompanied by plasmoquine ("Quinoplasmoquine". "compound plasmoquine", etc.) for reducing the frequency of relapses. But, in view of the opinions held with regard to artificial induction of the disease, the Commission would be willing to reconsider the question if laboratory experiments on birds or monkeys, confirmed by clinical experiments on artificially induced malaria in man in known conditions, should prove that the addition to quinine of a non-effective dose of plasmoquine really enhances the action of the quinine.

The method that the Commission recommends to prevent recurrence of subtertain fever differs from that proposed for tertian and quartan fever. The reason is that there is more chance of completely ridding the organism of all the parasites in the case of subtertian malaria than in infection hy the other malaria parasites. The Commission recommends that in the case of subtertian fever (*P. falciparum*), when treatment of the first attack has not resulted in a permanent cure, the treatment should be repeated at the first reappearance of the disease.

Prevention of the spread of malaria (Treatment directed against the gametocytes) — As quinine and atebrine both destroy the gametocytes in tertian and quartan fevers, difficulty begins only with the gametocytes of subtertian fever (crescent bodies), on which threse drugs have only a weak action. Plasmoquine has however a very effective action. Doses intended to prevent infection of mosquitoes by the carriers of crescent bodies should be administered twice a weak during the period in which the blood contains crescent bodies. The Commission considers that both in the laboratory and in the field experiments should however be carried out with doses of 0·02 to 0·04 gm. in order to determine the minimum effective and non-toxic dose.

The Commission finally reminds readers that in 1927 it recommended malarial countries to restrict their activities, except in the case of colonies situated in special conditions, and to base their medical and sanitary services on the principle that in the control of malaria it is better to aim at attenuating the virulence of the disease and reducing mortality, rather than to adopt the more radical measures that are necessary for the complete elimination of the parasite in a given region.

G. R.

— International Review of Agriculture, October 1933.

11 Public Apathy to Forestry:

The need for enlightenment—what Landowners and Commissioners might do—better propaganda at the shows.

Outspoken comment on the indifferent attitude of our people to the subject of forestry was made at the British Association meeting at Leicester. Mr. W. A. Robertson, F. R. G. S., I. F. S.—who, as readers know, is shortly to take up the post of Director of the Forestry Products Research Laboratory at Princes Risborough—addressed the Forestry Section of the Association on "Public Opinion in the Empire upon Forestry." Mr. Robertson, in visiting most of the Dominions, has been struck by the fact that almost everywhere the word "forestry" is not associated with an established tree crop, and he thinks the same holds good in England.

In his address he contrasted public opinion in the countryside in England and on the Continent. Practically over the whole of the Continent, he said, the peasant, small proprietor, or labourer, recognised the neighbouring forests or woodlands as having a real place in the economy of the countryside, even if he regarded them mainly as there to be stolen from or illicitly grazed in. The various forest operations and their cycle meant something to the countryman. In England, outside the Chilterns and a few places where local industries had some slight dependence on the woods, the villager looked on the woods as just a bit of the landscape, or a useful place in which to poach. They meant next to nothing to him. The contrast with the town dwellers was even greater. In England, the home of pedigree animals, and of garden plants grown to perfection, the public appeared to like to see its trees in the worst condition of disease, decrepitude and neglect.

The Reason for Indifference.

"What is the reason for this contempt for what I personally consider to be the most skillful side of the craft of silviculture, the winning of nature to carry out our objects? From very early times in our industrial history," said Mr. Robertson, "the natural hereditary policy of England, has led us to rely for timber supplies less on our national forests than on imports from overseas. Owing to the lack of really good navigable rivers, and because our natural forest zone was readily adaptable to pasture, it paid the country better to export wool and import timber than to keep the forest zone under forest, while

at the time, when the reduction of the Sussex forests through the iron industry might have compelled some care to be given to their preservation, the development of the coalfields allowed of the forest being neglected without damage to the iron industry."

In this way, England has never been compelled to look after its woodlands, and we can see that the time when England was starting its colonial expansion in the latter part of the seventeenth and the early eighteenth century, was just the time when, on the Continent, the stylematic control and working of forests really began. The English-speaking lands overseas have been peopled with folk to whom forests and woods had meant little at home.

Too Much Attention to Cash Side.

Whatever the causes might be, however, continued the speaker, there could be no doubt that public opinion, both at home and overseas, needed enlightening as to the real aims of forestry. He was afraid that in the last ten years or so foresters had laid too much stress on one aspect only of forestry, the cash side. It was probably unavoidable. In these days, figures and statistics commended attention, though foresters knew well that trees never did grow exactly to compound interest tables, or to graphs of height and age. Personally, he said, " Thank God, they don't ! "

" I see grave risks in making the public think that large annual planting programmes, high-volume increments in exotic conifers, and calculations of future yields against accumulated compound interest are the only important points to be considered. Such figures can be grossly misleading. They lead to a disregard of the natural risks of forestry, and compel the neglect of the most essential tending operations. I have in mind the example of New Zealand. There the extraordinary increment put on by some exotic species has led to the plantation of huge blocks of one spices, and recently we hear of a serious attack of *Phomopsis*, which has ruined an important forest holding. There, too, I heard the admission that some—I will not say all—plantations could not be thinned because the authorities could not afford to do it under a five per cent. compound interest calculation. The extra expenditure would put all their forecasts wrong."

If things went wrong with the plantations after public opinion on forestry had been educated on these lines, the reaction against forestry in all its aspects would be very serious. No more than any other industry or craft could forestry escape the failure of " get-rich-quick " schemes.

It appeared that they had got to the stage when their propagandists should try to emphasise the continuance of forests, their maintenance as a continuous crop, the importance of the sustained yield, the continuity of work they provide, the part they ought to play in the economy of the countryside, and try and get people away from the idea that a forest was something one planted and then cut down after sleeping by it for many years. " It is here that I feel myself most in sympathy with Mr. Ponsonby's outlook " — [Mr. Ponsonby gave the presidential address to the Section last year.—Ed,] — " not in support of the idea of the mixed selection system except under distinct limitations, because I can claim to have a good many years of experience of the difficulties of trying to work it, but because of the bad impression which planting, used to the exclusion of natural regeneration, produces in the minds of many people.

" Clearly, we cannot abandon planting, nor the planting of conifers on a large scale. Economy and the industrial needs of the country demand that we increase our forest areas, not only here but in most of the Dominions, but I do think that it is up to the forest services of the Empire and the legislatures which determine forest policies to think more of the existing natural forests, and show, even at ths risk of a smaller return, that these forests can be kept going as part of the economic life of the country, and, by systematic working of them, demonstrate their continuity,"

Australia, both in Victoria and more especially in Western Australia, had some fine examples of what could be done, proceeded Mr. Robertson. Recent research in New Zealand, where compound interest forestry was carried to extreme, showed that supposedly unregenerable climax forests could regenerate themselves successfully, and in Canada much of the forest would regenerate itself in spite of man. Even in the south of England excellent natural regeneration of Scots pine could be seen, and he would like to suggest to the Forestry Commission that if they possessed suitable areas they might be worked under a system of natural regeneration. In this way the passer-by might learn something of the natural succession of the forest growth, and not remain firm in the belief that forestry meant spoiling sheep land or somebody's pet bird studio or someone else's landscape.

In these hard times it was an impertinence for a landless man to tell landowners what they should do with their property; yet, with considerable fear and trembling, he dared to suggest that owners of woodlands could do a good deal to educate public

opinion if they did more towards tending their existing woodlands, even at the risk of antagonising their gamekeepers.

Strange Bedfellows!

On almost any walk in the countryside one passed unthinned woods, usually plantations, choked with dead and dying stems. Seeing what strange mixtures had been set to compete, the amount of dead and dying trees was not surprising. They represented the misery made by strange bedfellows. But it was not to be wondered at if the passer-by thought forestry must be a waste of money, public or private, if this was all that resulted. When the landowner said he could not afford to tend his woods, the looker on had nothing more to say, although, seeing that some landowners tended their woods and made them pay, he might have doubts.

In the Dominions and Colonies it really did seem as if the era of timber mining was slowly passing away. It looked as if the dangerous sequels to disforestation were beginning to be dreaded. In the more continental climates of Australia and Canada the protective effects of forests would be learnt sooner than in England, where their effect was so small that it was only by the dread of the results of their absence that the place of forestry would be appreciated; by that, and by axamples of sound forestry.

A Hint to Commissioners.

At the same time, the public must be conciliated to some extent. He learnt recently that in some districts the Forestry Commission was planting or encouraging the growth of a belt of broad-leaved trees along its coniferous plantations, and he congratulated them on a very wise move from a popularity point of view. He suggested that occasional notice-boards along their properties, giving some information about the property, its area, the age of the crop and its composition, would be money well spent.

Mr. Robertson also suggested that something more could be done at the various shows to illustrate what forestry meant, apart from planting operations. Frankly, he could not enthuse over specimen seedlings nor over curiously shaped spades and draining or planting implements. He came away feeling inclined to ask, as he had been asked by other visitors, " What is the result going to be ? " How will it differ from existing woodlands ? " He could visualise a well-tended forest, but could the layman do so ? Could he " glimpse " the difference

between a well-tended crop and the derelicts he saw all over the countryside, or how the timber of the new crops would be an improvement on the old? Until he did, here, forestry would make no appeal to him, and public opinion would remain indifferent or hostile.

"In the Dominions my experience is that they manage their shows better. Certainly, their problems are more spectacular, but they do try to reach the public, and that is what foresters all over the Empire must try and do. Forestry is not a dismal subject, as we all know, but our problem is to get it across the boundary of the forest. I want to say with special emphasis that I intend no disparagement of what private owners and the Forestry Commission have done in the past; they have done the best they could under difficult circumstances. What I want to see is the public brought to realise the use and meaning of the forest as a whole. I believe it will be achieved in time."

— Timber Trades Journal. 16–9–'33.

Additions to the Gass Forest Museum during the year ending 31—12—1933.

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Serial No.	Contribution	Contributor.
1.	Nineteen photographs of Exploitation work done by Mr. Kuruvilla at Ulandi, S. Coimbatore Division.	Purchased.
2.	Forty photographs of silvicultural and botanical interest, and ten of engineering and utilization.	College staff.
3.	Fifty botanical specimens.	Do.
4.	Fifteen species of timber specimens characteristic of the Andamans.	W. E. Flewett Esqr. B.A I.F.S. Divisional Forest officer, South Andamans.

Additions to the Madras Forest College Library during the year ending 31—12—1933.

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Books :—

1. Plant Physiology — By Edwin C. Miller, Ph. D.
2. Malayan Forest Records — Commercial Timber trees of the Malay Peninsula ; by, Foxworthy.
3. Suggestions regarding Forest Administration in the Madras Presidency, 1883. — By, D. Brandis.
4. Society for the promotion of Natural Reserves. (Incorporated by Royal charter, 1916). Handbook. 1932.
5. Commercial Timbers of India, By R. S. Pearson, and H.P. Brown. Vols. I & II.
6. Ferns of Southern India, II Edition, 1873.
7. Game birds of India, Burma & Ceylon. Vols. I & II.
8. Fauna of British India, "Odonata" Vol. I By, Col. Fraser.
9. An introduction to Structural Botany, Part I. Flowering Plants. By, Henry Scott & F. T. Brooks.
10. Military Engineer Services Hand book, VI Edition. Reprint 1930.
11. Sanitary Engineer. Part I. Water Supply. Part II. Sewege & Drainage Works. By, C. E. V. Goument. 1933.

12. Elements of Forest Mensuration. By. H. H. Chapman and D. B. Demenitt.
13. Forest Education. By H. S. Graves and C. H. Guise.
14. The World. (A General Geography for Indian Schools. By Dudley Stamp-
15. The Epic of Mount Everest. By, F. Younghusband.
16. The theory of Forest Types. By, A. K. Cajander.
17. A Dictionary of the Flowering Plants and Ferns. By. J. C. Willis.
18. Sir Ganga Ram's Pocket Book of Engineering.
19. Benn's Six Penny Library: (a) An introduction to Botany, By, Sidney Mangham, M. A, (b) Parasites. By, Geoffrey Lapage. (c) Modern problems in Biology, By. W. J. Dakin. (d) Fungi- By, W. J. Dakin. (e) An introduction to mycology. By, Ramsbottom (f) The study of Birds. By, E, M. Nicholson. (g) The Earth, The Suu and The Moon, By George Forbes. (h) Introduction to Physical Science. By, James Rice, M. A. (i) The Weather. An introduction to climatology. By, C. E. P. Brooks. (j) Insects and Industry. By' J. W. Munro. (k) Embryology. By, E. W. Mc. Bridge. (l) An Introduction to Zoology. By, Graham Kin. (m) Scouting and Youth movements. By Sir Robert Baden Powell.
20. Indian Fish of proved utility, as mosquito destroyers. By S. Sewell and B. L, Chaudari.
21. Forest Flora of the Andaman Islands. By, C.E. Parkinson.
22. Forestry. An Economic challenge.
23. Tables for use with Brandis' Hypsometer for measuring the height of trees etc. By F. B. Manson and Haines.

Bulletins. Pamphlets, Memoirs etc. :—

24. Forest Bulletin: No. 79 of 1932. Calorific values of some Indian Woods.—By, S. Krishna and S. Ramasamy.
25. No. 78. The Problem of the Pure Teak Plantation.—By, H. G. Champion, I. F. S., 1932.
26. No. 77. The Identification of important Indian Sleeper Woods —By, K.A. Chowdhury, B. A., Wood technologist 1932.
27. Botanical Memoirs No. 12. Introduction to the Systematy of Indian Trees.—By, A. H. Church, M. A.
28. Elementary Notes on Conifers By, A. H. Church.
29. Leaflet No. 9. Forestry Commission. "Forest Fires".
30. Forest Products Research. Bulletin No. 13. The Principles of Wood working. A survey of present knowledge on this subject.

31. I. F. R. Immature stages of Indian Coleoptera.
32. I. F. Records Vol. XVII, part IV. The Sutlej Deodar, its ecology and Timber Production. — By, Maclagan Gorrie, 1933.
33. Vol. XVII, Part I. Entomologiaal Investigations on the spike disease of Sandal. An Introductory Survey of the problem.—By, Cedric Dover, 1932.
34. Vol. XVII part V. The importance of the origin of seed used in Forestry.—By, H. G. Champion, I. F. S., 1933.
35. Vol. XVIII part. VI New Cerambycideae from India. (Coleoptera); By, Fischer 1933.
36. Vol. XVII part VIII Immature stages of Indian Coleoptera By Gardner, 1933.
37. Interim report on work under project 2, strength Tests of Timbers in structural sizes, with test results upto 1932. By, L. N. Seaman, I. F. S., 1933.
38. Vol. XVII. Entomological Investigations on the spike disease of Sandal. (3) Membracidae (Hompt.) By, Funknhouser 1933,
39. Vol. XVII part IX. Spike Disease of Sandal (2) Bostrychidae, Platypodidae and Scolytidae.—By, C. F. C. Beeson.
40. Vol. LVIII part I. Entomological investigations on the spike disease of Sandal. (4). Cercopidae.
41. Vol. XVIII part II. Spike disease of Sandal (5). Brenthidae and Lycidae.
42. Vol. XVIII part III, Spike disease of Sandal (6). Anthrilidae.
43. Vol. XVIII part IV. spike in Sandal (7). The genus Exocentrus, Cerambycidae.—By W. S. Fisher.
44. Vol. XVIII part VI. Spike in Sandal (9). Neuroptera.
45. Vol. XVIII part VII. Melasidae and Elateride.
46. Vol. XVIII part IX. Immature stages of Indian Coleoptera. Bostrychidae,
47. An investigation of Petroleum oils for Malaria control purposes—By, G. C. Ramsay, and J. A. Carpenter.
43. Triennial Programme of work for the Forest Research Institute, Dehra Dun, for 1933-36.
49. The Forest Research Institute, Dehra Dun. for 1933.

Reports :—

50. Annual report on (i) Silvicultural Research for 1931-32. (ii) Working Plans, Silviculture and Entomology in in Burma for the year 1931-32.
51. Report of the Department of Industries for the year ending 31-3-1932.

52. Western Australia 1933. Report on the operations of the Forest Department for year ending 30th June 1933.
53. Census of 1931. Village statistics, for the 26 districts of the Madras Presidency.
54. Progress report of
Forest Administration in (i)t he province of Assam for 1931-32. (ii) Coorg for 1931-32, By, H. G. Hicks, I.F.S. (iii) The Punjab for 1931-32. (iv) United Provinces for 1931-32. (v) Bihar and Orissa, for 1931-32. (vi) Madras Presidency, for 1932-33. (vii) Central Provinces for 1931-32. (viii) Bombay Presidency including Sindh, for 1931-32. (ix) Burma, excluding the Federated Shan States for 1931-32, (x) Bengal, for 1931-32. (xi) Mysore States for 1931-32.
55. Annual report on Working Plans, Silviculture and Entomology in Burma for the year 1932-33.
56. Report on Public Instruction in the Madras Presidency for 1931-32 and for the quinquenniem 1927-28 to 1931-32.
57. Forest Research in India 1931-82. Part II Provincial Reports.
58. General list of Foresters in the Forest Department, in the Madras Presidency, corrected upto 1st January 1932.
59. General list of Rangers corrected upto 1st May 1932.

Working Plan ;—

60. For the Baihar and Supkhar Ranges, Balaghat Dn. for 1932—42.
61. For the Myitkyina forest Dn, N. Circle, Burma for the period1931—32 to 1930—41.
62. For the Thayetmyo.Forest Dn, Delta Circle, for the period 1931—32 to 1940—41.
63. For the Poona Forest Dn., By, E. A. Garland.
64. Revised working plan for (i) the Mount Stuart Forests, South Coimbatore Dn; by, M. V. Laurie, I.F.S. 1933. (ii) the Ghumsur Forest, Ganjam Dn. for 1930—31 to 1939—40. By, Kesavannunni Nayar, I.F.S.

Journals and Periodicals.

65. The Journal of the Bombay Natural History Society,
Vol. XXXIV Nos. 1 to 4 1930.
,, XXXV Nos. 1 and 2.
66. Nature. July—December 1930. January—Jnne 1931. July—December 1931.
67. Bulletin of the Imperial Institute.
Vol. XXVIII 1930. XXIX, 1931.
68. The Agricultural Journal of India.
Vol. XIX 1924. Vol. XXV 1930.

69. The Indian Journal of Agricultural Science, 1931.
70, Review of applied Entomology. Series B. Vol. XVII 1929, Vol. XVIII, 1930.
    Series A. Vol. XVIII 1930.
71. The Indian Forester. Vol. LVI 1930, Vol. LVII. 1931.
72. Forests and Outdoors. 1930.
73. Journal of Forestry, Vol. XXV 1931.
74. International Review of the Science and Practice of Agriculture. 1923.
75. Science Progress. Vol. XV 1920–21, Vol. XIX 1924–25.

NOTICE.

Indian Forester Prize — 1934

Essay Prize for past students.

The subject for essay is :—

"*Suggestions for more effective methods of educating the public in forest principles, and the benefits to a community in a wise forest policy*".

A prize valued at about Rs. 25/— will be awarded for the best essay from past students.

No award will be made unless a satisfactory standard is reached. The essay should be clearly written or typed on one side of the paper only and should not exceed 2000 words. It should be submitted to reach the Principal between the 10th May and 1st June 1934. An essay not received within this period will not be considered. This should be the unaided work of the competitor.

P. W. DAVIS,
Principal.

Departmental Notifications.

The following Sub-protem promotions of Foresters are ordered :—

I. *To I grade Sub-portem* :

(1) In partial modification of para 1 (5) of this office Reference dated 28-11-32, Forester N. Gopalasawmi Naidu is promoted to the First grade sub-protem as follows :—

From 1-8-32 to 4-11-22 *vice* C. J. Muthanna deputed to Madras Forest College. From 5-11-32 *vice* V. Veerasawmi Naidu promoted as Ranger Seventh grade temporary.

(2) C. Sreedhara Mannadiar, Forester Second grade from 1-1-33 *vice* C. K. Unni promoted as temporary Ranger Seventh grade.

(3) P. K. Sankara Menon, Forester, Second grade, from 8-1-33 *vice* A. Muhammad Akbar promoted as temporary Ranger Seventh grade.

(4) S. Muthukrishna Nayudu, Forester Second grade, from 1-3-33, *vice* W. P. Halasayanatha Ayyar promoted as temporary Ranger Seventh grade.

II. *To II grade Sub-protem.*

(1) M. D. Pichai Pillai, Forester Third grade, Working Plans Circle, from 1-1-33 *vice* C, Sreedhara Mannadiar.

(2) N. P. Chirukandan, Forester Third grade, Working Plans Circle, from 8-1-33 *vice* P. K. Sankara Menon,

(3) V. Panchapakesa Ayyar, Forester Third grade. Coimbatore Circle, from 1-3-33 *vice* S. Muthukrishna Nayudu.

(4) C, B. Ekambaram, Forester Third grade, Ootacamund Circle, from 1-3-33 *vice* V. Ranga Rao transferred to the Coimbatore Circle.

(5) K. A. Muddayya, Forester Third grade, Ootacamund Circle, from 1-3-33 *vice* Forester M. Chidambarappa (Bellary circle) died.

(6) Marcel D' Souza, Forester Third grade, Ootacamund Circle, from 9-6-33, *vice* Forester Minuddin Sahib (Salem circle) retired from service.

2. The vacancies in the Third grade caused by the above promotions may be filled by the Conservators themselves.

3. Vacancies in the First grade should continue to be reported to this office until further orders.

Waltair Circle.

14—10—33. M.R.Ry., A. Neeladrirao, Ranger Seventh grade granted leave on average pay for 3 months from 1-11-1933 or date of relief.

26—10—33. M. R. Ry., Y. V. Anjaneyulu, Forester I Grade, to act as Ranger VII Grade from 5-4-1933 vice Ranger M. Narasingarao Naidu on leave.

1—11—33. The leave for 2 months granted to M. R. Ry., B. V. Nagaraja Iyer, Ranger II Grade further extended by 3 months on medical certificate from 17—9—1933.

10—11—33. M. R. Ry., P. S. Varadakrishnamachari, granted a further extention of leave for 2 months in continuation of the leave granted to him.

10—11—33. Mr. Abdul Razack (M. R. H). Forester I Grade and acting Ranger VII Grade in charge of Chandragiri Range, Parlakimidi division will be considered to have acted as Ranger Seventh Grade from 23-8-1933 vice Ranger M. R. Ry., B. V. Nagaraja Iyer on leave.

20—11—33. M.R.Ry., M. Narasingarao Naidu, Ranger Fifth Grade, posted to Nugur Range, Upper Godavari Division.

27—11—33. 1. *After the close of the V. T. School, 1933 Sessions.*

1. M. R. Ry., C. G. Krishna, Senior Instructor, V. T. S., to Devagiri Range, Parlakimidi in relief of Forester Y. V. Anjaneyulu, who will be attached to Parlakimidi division for assisting the D. F. O. with Section 4 and Section 16 notifications and reconnaissance report on the forests. 2. M. R. Ry. T. Balaramaswami Naidu. Junior Instructor, V. T. S., to the River Range, Lower Godavari, vice Ranger V. N. Leapingwel, placed on special duty in Rampa. 3. M. R. Ry D. Krishnaswamiah, on return from leave on 30-12-33, to Vinukonda Range, Guntur District. in relief of Ranger Ch. Ramamurti. 4. M. R. Ry. Ch. Ramamurti, on relief by No. 3 to Balliguda Agency in relief of Forester A. Narasingarao. 5. Forester A, Narasingarao, on relief by No. 4 to charge of Berhampur Range, Ganjam. 6. M. R. Ry. P. S. Varadakrishnamachari, on return from leave to Bezwada Range, Guntur. 7. M. R. Ry. A. Niladrirao, Ranger Seventh Grade temporary, on return from leave, to Chandragiri Range, Parlakimidi in relief of Forester A. Arogyaswami Pillai, who will be attached to Parlakimidi division for doing survey and assisting the District Forest Officer in the preparation of Section 4 and 16 notification.

6—12—33. The leave for one month granted to Abdul Razack Saheb. Forester, I Grade and, acting Ranger VII Grade is extended by one month.

20—12—33. The leave for 5 months granted to M. R. Ry. B. V. Nagaraja Iyer, further extended one month from 17—12—33.

20—12—33. Mr. V. N. Leapingwell, on special duty in Rampa, posted to Peddapur Range, Lower Godavari Division in relief of Ranger, J. D. Theodore. 2. Mr. J. D. Theodore, Ranger V Grade Ty., on relief by No. 1, transferred to Rajahmundry Range in relief of ag. Ranger V. Rangachari. 3. M. R. Ry.

V, Rangachari, on relief by No. 2 attached to Lower Godávari Division. 4. Mr. Abdul Razack, Forester I grade, on return from leave, attached to Parlakimidi Division for special duty.

Bellary Circle.

11—10—33. M. R. Ry., T. M. Krishnamachari Ranger VII grade, Anantapur Division granted extension of leave for 4 months from 23rd September 1933.

4—11—33. 1. M. R. Ry.. N. C. Mahadevan Pillai, Ranger II grade, Sidhout Range, Cuddapah North Division granted leave on medical certificate for 3 months from date of relief by No. 2. 2. M. R. Ry., A. Seetharamayya Range Officer, Badvel to relieve No. 1 and be in additional charge of the current duties of Sidhout Range until relief.

4—11—33 1. M. R. Ry., A. Ranganayakulu Nayudu, on expiry of his leave on 14th November 1933, posted to Hospet range, Anantapur Division. 3. M. R. Ry., V. N. Subrahmanya Ayyar, Ranger VI grade, Giddalore Range, Kurnool South Division, on relief by No. 2, posted to Sidhout Range, Cuddapah North Division, to relieve M. R. Ry., A. Seetharamayya, Range Officer, Badvel who is in additional charge of Sidhout Range.

20—11—33. M. R. Ry., K. Purushothama Rao Ranger V grade, Kurnool East Division on expiry of his leave on 3rd December 1933 posted to special duty in Kurnool South Division.

24—11—33. M. R. Ry., V. N. Subrahmanya Ayyar Giddalore Range, Kuanool South Division granted leave for 15 days from the date of relief, and on expiry of his leave should join in Sidhout Range, Cuddapah North Division.

28—11—33. M. R. Ry., T. K. Ramaswami Ayyar, Ranger II grade, Dornal Range, Kurnool East Division granted leave for 16 days from 14th January 1934 preparatory to retirement.

6—12—33. M. R. Ry., S. Rangamannar Doss, acting Ranger VII grade Cuddapah North Division granted extension of leave for 3 weeks from 2-12-33 to 22-12-33.

7—12—33. M. R. Ry., K. Thiruvenkatachary Cuddapah South Division on expiry of his leave on 3rd January 1934 posted to Rajampet Range of the same Division. 2. M. R. Ry., G. Devanayagam Nayudu, on relief by No. 1 transferred to Dornal Range, Kurnool East Division vice M. R. Ry., T. K. Ramaswamy Ayyar, to retire from 14th January 1934.

12—12—33. M. R. Ry., K. Purushothama Rao Kurnool East Division granted extension of leave for 4 months from 3rd December 1933.

17—12—33. M. R. Ry., K. Thiruvenkatachary Ranger IV grade, Cuddapah South Division on expiry of his leave on 3rd January 1934 posted to Balapalle Range. M. R. Ry., T. Paramasivam Pillai Ranger III grade, Balapalle Range, on relief by No. 1 transferred to Dornal Range, Kurnool East Division.

Working Plans Circle.

26—11—33. M. R. Ry., C. T. Thiruvengadam, Ranger III Grade Temporary, attached to the Lower Godavari Working Plans Divn., granted leave on average pay for one month from the date of relief in that division, subject to eligibility.

30—11—33. Mr. J. D. David, Ranger I Grade, Provincial Silviculturist's Division, granted leave for *four* months followed by leave on half average pay for *two* years preparatory to retirement from 4th February 1934.

21—12—33. M. R. Ry,, P. Madhavan Nair, Ranger Sixth grade' No. II. Working Plans Division, Palamcottah granted leave, for one month from the forenoon of 3rd January 1934.

Salem Circle.

12—10—33. M. R. Ry., M. Muthuswami Ayyar, granted extension of leave for 4 months.

18—10—33. Ranger B. Gulam Dastagiri Sahib, (Sixth grade) on return from leave posted to Valappadi Range. Central Salem Division, vice Ranger C. N. Narasimhachari.

22—11—33. M. R. Ry., M. R. Doraiswami Ayyar, Senior Instructor, Vernacular Training School, on the close of session posted to Dharmapuri Range in relief of Ranger Thathachariar proceeding on leave preparatory to retirement.

22—11—33. M. R. Ry., P. A. Krishnaswami Mudaliar, Ranger IV grade, Gudiyattam Range on relief by No. 2. granted leave for 4 months. 2. M. R. Ry., S. Ramalingam Ayyar, Ranger Seventh grade, after close of the Vernacular Training School session, posted to Gudiyattam Range of Chittoor division.

22—11—33. Mr. E. W. Fernandez, Ranger Fourth grade, Palmaner Range. granted leave for four months from date of relief. M. R. Ry., M. S. Krishnaswami Ayyar, Ranger Sixth grade on return from leave on 27—11—1933, posted to Palmaner Range of Chittoor division.

8—12—33. M. R. Ry., P. Shanmugasundaram Pillai, Trained Forester I grade, appointed as Ag. Ranger Seventh grade, Atur Range, South Salem division, with effect from 20-11-1933 — vice M. R. Ry., K. M. Gopalachari Ranger IV grde on leave.

3—1—34. In supersession of Service Order dated 12—10—1933, M. R. Ry., M. Muthuswami Ayyar, Ranger granted extension of leave for four months from 10-10-1933 in continuation of the leave already granted.

5—1—34. M. R. Ry., K. M. Gopalachari, posted for special duty at Tirupattur, West Vellore division, preparatory to taking charge of the Sandalwood sale depot.

Coimbatore Circle.

1—11—33. M. R. Ry. P. A. Venkataraman, Ranger IV grade, Punachi Range, South Coimbatore Division, granted leave for

4 months from 3–1–1934, with permision to prefix the Christmas and New year holidays to his leave.

8—11—33. M. R. Ry., T. G. Sankaran Nair, Kollegal Division, granted leave for 6 weeks from 3–1–1934 with permission to prefix the Xmas and New Year holidays to his leave.

23—11—33. M. R. Ry., M. Gopalaswamy Naidu, Forester I grade S. P. T. holding charge of Mettupalayam Range, North Coimbatore to act as Ranger VII Grade from 10–11–1933 to 9-12-1933, vice M. R. Ry., C. Thiruvengadam Pillai granted leave on half average pay.

24—11—33. M. R. Ry., A. R. Manuals South Coimbatore division, granted extension of leave for 3 months from 14–11–1933 in continuation of the leave for 4 months from 14–7–1933 granted to him.

6—12—33. On expiry of his leave, M. R. Ry., C. Thiruvengadam Pillai, North Coimbatore, will join in Punachi Range, South Coimbatore Division. He will remain attached to the range until the afternoon of 21–12–1933 when he will take over charge of the range from Ranger M. R. Ry., P. A. Venkataraman proceeding on leave. 2. M. R. Ry., M. Gopalaswami Naidu will continue to hold charge of Mettupalayam range, until further orders. He will act as Ranger VII grade from 3–1–1934.

6—12—33. V. Maragathavelu, Forester I Grade, North Coimbatore, to hold charge of Kollegal Range from 21–12–1933 vice Ranger M. R. Ry., T. G. Sankaran Nair granted 6 weeks leave from 3–1–1934 with permission to avail himself of the X'mas and New year holidays. He will act as Ranger Seventh grade from 3–1–1934 until further orders.

4—1—34. M. R. Ry., R. Alagiriswamy Naidu, Ranger III grade, South Coimbatore Division, granted leave from 1–10–1933 to 17–2–1934.

Ootacamund Circle.

1—11—33. Mr. Thomas Thachil, Ranger II grade (Temporary) granted leave for eight months from the afternoon of 30th June 1933.

9–11–33. Mr. J. S. Rowland, Ranger III grade Bolampatty Range, granted leave for two months from date of relief. 2. M. R. Ry., K. K. Appayya, Ranger V grade attached to Mannarghat Range, Palghat division, posted to Bolampatty Range, vice No. 1.

3—12—33. M. R. Ry., A. Rama Hebbar, Ranger II grade Shankaranaraina Range granted leave for four months from date of relief. 2. M. R. Ry., V. Dooma Shetty, Ranger V grade on expiry of his leave posted to Shankaranaraina Range, North Mangalore division (vice No. 1)

20—12—33. M. R. Ry., K. V. Krishnan Nair, Ranger II grade, on expiry of his leave is posted Shankaranaraina Range, vice M. R. Ry. Rama Hebbar granted leave.

3—1—34. M. R. Ry. K. Dooma Shetty, Ranger V grade, granted extension of leave on average pay for four months on medical certificate from 8th December 1933.

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